

CLAIMS

1. A device for fitting and removing a closing means (27, 29) on an end portion (13) of a tubular element (3), comprising:
  - a) a container (1) provided with a cover (4); said container (1) having a bottom (16) and perimeter walls (17) extending from said bottom (16) to said cover (4), so as to define an external lateral surface (40) of the container (1) and the lateral surface (24) of an internal chamber (18) of said container (1);
  - b) at least one connection (11) extending from said external lateral surface (40) of the container (1) for coupling said internal chamber (18) to a tubular element (3) of specified diameter;
  - c) a rotating platform (19) inside said chamber (18) at the bottom (16) thereof,
  - d) a pin (22) integral with said rotating platform (19);
  - e) an actuator for rotation of said pin (22);
  - f) at least one closing means (27, 29), having a pointed end (30) intended to be received in said end portion (13) of tubular element (3) and a tail end (31) opposite to the pointed end (30);
  - g) a receiving housing (26) that is able to receive and hold a first closing means (27) from said end portion (13) of tubular element (3); and a releasing housing (28) that is able to contain and release a second closing means (29), in said end portion (13) of tubular element (3); said receiving and releasing housings (26, 28), provided with an opening for passage of the closing means (27, 29), being fixed on said rotating platform (19) with said opening turned towards said perimeter walls (17).
2. The device as claimed in claim 1, characterized in that said receiving housing (26) comprises, internally, retaining means (37), and said closing means (27) has undercut portions (36) which are

able to receive said retaining means (37) when said closing means (27) is received in said receiving housing (26).

3. The device as claimed in claim 1 or 2, characterized in that said closing means (29) is held spring-loaded radially inside said releasing housing (28).
4. The device as claimed in claim 3, characterized in that the spring-loaded closing means (29) is subjected to the action of an elastic component (41) positioned inside said releasing housing (28) capable of abutting against said tail end (31) of the closing means (29) to cause the closing means (29) to travel a predetermined distance towards said connection (11).
5. The device as claimed in claim 4, characterized in that the perimeter walls (17) of the container (1) constitute a stop for said closing means (29) under the action of the elastic component (41).
6. The device as claimed in claim 4, characterized in that the perimeter walls (17) of the container (1) have at least one pair of fixed cam elements for said closing means (29) projecting circumferentially from the perimeter walls (17) on one side relative to said connection (11).
7. The device as claimed in any one of the claims 3 to 6, characterized in that said releasing housing (28) comprises stopping means (38), and said closing means (29) has a peripheral recess (35) able to receive said stopping means (38) when said closing means (29) is contained in said releasing housing (28); said stopping means being able to prevent the withdrawal of the closing means (29) in the space of the predetermined travel of said elastic component (41).
8. The device as claimed in any one of the claims 2 to 7, characterized in that said connection (11) is passable for coupling of said

end portion (13) of tubular element (3) with the pointed end (30) of the first and of the second closing means (27, 29).

9. The device as claimed in any one of the claims 1 to 8, characterized in that said connection (11) is able to engage with a connector (2) comprising a sleeve (10) coupled to said connection (11).
10. The device as claimed in claim 9, characterized in that said connector (2) comprises a spring (16) abutting between said sleeve (10) and a charging handgrip (14) to bring the end portion (13) of tubular element (3) closer to one of said receiving and releasing housings (26, 28).
11. The device as claimed in claim 9, characterized in that said coupling is of the threaded type (44-45).
12. The device as claimed in claim 11, characterized in that said coupling is of the luer lock type.
13. The device as claimed in any one of the preceding claims, characterized in that said receiving housing (26) is a receptacle that is open on the side facing the perimeter walls (17) and is liquid-tight against them.
14. The device as claimed in any one of the preceding claims, characterized in that said pointed end (30) of the closing means (27, 29) comprises sealing means (32) which interact with said end portion (13) of tubular element (3).
15. The device as claimed in any one of the preceding claims, characterized in that said pointed end (30) of the closing means (27, 29) extends towards said tail end (31) thereof with a body (33) of diameter greater than the diameter of said tubular element (3).
16. The device as claimed in any one of the preceding claims, charac-

terized in that said actuator is constituted of a handle (5) coupled to said pin (22) passing through said cover (4).

17. The device as claimed in claim 16, characterized in that said cover (4) has, externally, reference marks (6, 7) for the handle (5) for positioning the receiving and releasing housings (26, 28).
18. The device as claimed in any one of the preceding claims, characterized in that said container (1) further includes two routes of communication (8, 9) with the exterior.
19. The device as claimed in claim 18, characterized in that said two routes of communication are connections for end portions of tubular elements.
20. The device as claimed in claims 1 and 19, provided with valved means for selectively establishing the passage of a fluid between said connection (11) for coupling to said tubular element (3) and one of said two routes of communication at a time.
21. The device as claimed in any one of the preceding claims, characterized in that said receiving housing (26) contains disinfecting means.
22. The device as claimed in claim 20, characterized in that said releasing housing (28) contains disinfecting means.
23. The device as claimed in claim 20 or 21, characterized in that said disinfecting means are constituted of povidone gel.
24. The device as claimed in any one of the preceding claims, characterized in that said connection (11) is closed with a fracture membrane.
25. A tubular element (3) having, at its distal end, means for cou-

pling to a connection (11) of the device described in any one of the claims 1-24.

26. A catheter for peritoneal dialysis comprising the tubular element (3) of claim 25.
27. The catheter as claimed in claim 26, having visual means of indication of the number of cycles of peritoneal dialysis.
28. A set for peritoneal dialysis, comprising the device of any one of the claims 18-24 and the catheter of claim 26 or 27.
29. A method of fitting and removing a closing means (26, 28) on an end portion (13) of a tubular element (3), comprising:
  - a) coupling said end portion (13) provided with a first closing means (27) to the connection (11) of the device described in any one of the claims 1-24;
  - b) passing said end portion (13) through said connection (11) until said first closing means (27) engages with a receiving housing (26) that is able to receive and hold said closing means (27);
  - c) retracting said end portion (13), releasing said closing means (27);
  - d) acting on the actuator so as to cause the rotating platform (19) to rotate and move away said receiving housing (26) and bring up a releasing housing (28) that is able to contain and release a second closing means (29),
  - e) causing said end portion (13) to engage with said second closing means (29) contained in said releasing housing (28);
  - f) retracting said end portion (13) provided with said closing means (28).
29. A method of using the device described in claims 1-24 as connector for peritoneal dialysis comprising:

- a) coupling a peritoneal catheter provided at its distal end with a first closing means (27) to the connection (11) of said device;
- b) coupling a second connection (8) to a source of solution for peritoneal dialysis;
- c) coupling a third connection (9) to a drainage system;
- d) passing said distal end through said connection (11) until said first closing means (27) engages with a receiving housing (26) that is able to receive and hold said closing means (27);
- e) retracting said distal end, releasing said closing means (27);
- f) acting on the actuator so as to rotate the rotating platform (19) and move away said receiving housing (26) and allow the peritoneal dialysis solution to pass through said first connection (11) to the catheter, thus carrying out the dialysis treatment;
- g) acting on the actuator so as to rotate the rotating platform (19) and allow the peritoneal dialysis solution to pass through said third connection (9) to the drainage system;
- h) acting on the actuator so as to rotate the rotating platform (19) and bring up a releasing housing (28) that is able to contain and release a second closing means (29) for said distal end;
- i) passing said distal end through said connection (11) until it engages with said second closing means (29) contained in said releasing housing (28);
- j) retracting said distal end provided with said closing means (29).